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## 南海北部磁异常特征及对前新生代构造的指示

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The characteristics of magnetic anomalies: Implications for Pre-Cenozoic tectonics of the northern South China Sea

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摘要

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**摘要** 为了研究南海北部前新生代构造, 利用新近的船载磁力测量数据, 对磁异常进行变纬度化极, 并反演计算视磁化强度和磁源重力异常, 以及对三条OBS剖面进行重磁拟合. 结果认为东沙隆起高磁异常带是浙闽沿海火山岩带向西的延续, 其间被NW向古老的转换边界断裂F10错断; NE向的F2断裂是高磁异常带的南界, 并限制了底侵活动的北界; F3断裂在拉伸减薄前是一个薄弱带, 两侧深部热状态存在差异, 极有可能是晚中生代古俯冲缝合带位置. 磁静区在F2和F3断裂之间的磁性层磁性减弱, 主要原因是底侵活动引起的热蚀变作用影响; 而在F3断裂南侧磁性层磁性较强且较为破碎, 斜磁化下磁异常正负相互压制是该区形成弱正磁异常的主要原因, 该区磁性层的独特特征也可能反映了“古洋壳”的存在.

**关键词:** 南海北部 磁异常 高磁异常带 磁静区 断裂 前新生代构造

**Abstract:** In order to study the Pre-Cenozoic tectonics of the northern South China Sea, we have calculated the RTP (Reduction To the Pole) anomaly, apparent magnetization and pseudo-gravity anomaly with the latest shipboard magnetic data in the north of the South China Sea (SCS). Then the density and magnetic susceptibility along three OBS profiles were determined. The result shows that high magnetic anomaly belt (HMAB) of Dongsha Uplift is the continuation of the volcanic belt in the coastal area of Zhejiang and Fujian provinces, and is dislocated by F10 fault trending NW which may be the old transformation boundary. F2 fault trending NW is the south boundary of the HMAB, and limits the north boundary of underplating. F3 fault is a weak zone before the crustal extension and thinning, and deep thermal state is different on its two sides, which may reveal the location of the Late Mesozoic subduction. The magnetization of magnetic layer reduces in the magnetic quiet zone between F2 fault and F3 fault. We ascribe the reducing magnetization to the hydrothermal alteration while high temperature mantle materials being underplated. However, in the south side of F3 fault, the magnetization increases and magnetic source blocks of the magnetic quiet zone are fragmented, the cause of weak positive magnetic anomalies on the surface is mainly due to the suppression between positive and negative magnetic anomalies under oblique magnetization. The unique characteristics of the magnetic layer in the area may indicate the existence of "ancient oceanic crust".

**Keywords:** The northern South China Sea Magnetic anomaly High magnetic anomaly belt Magnetic quiet zone Faults Pre-Cenozoic tectonic

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